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DECISION SUPPORT SYSTEM FOR DETERMINATION OF VOCATIONAL SCHOOL DEPARTMENT GKPS-3 PEMATANG SIANTAR USING WEB-BASED WEIGHT PRODUCT METHOD

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Abstract

Following applicable standards throughout Indonesia, prospective vocational students who will register for school will experience major selection (majors). For this reason, prospective students are expected to be able to assess their interests, talents, and abilities so that they do not choose the wrong department to take. The selection of majors for prospective vocational students is the beginning of future career choices, but many prospective students choose majors because of the influence of friends. The role of parents is very important. The direction available at SMK GKPS 3 includes accounting, office administration, and software engineering. The assignment will be adjusted to the student's academic abilities and interests. The purpose of these majors is so that students can be directed in receiving lessons that are following the abilities and talents possessed by students. To assist in the process of determining the direction, a decision support system (SPK) was designed with the Weight Product (WP) method. The WP method is done by using multiplication to relate the attribute rating, where the rating of each attribute must first be ranked with the attribute's weight. Based on the data sample studied, the DSS is designed to operate properly and correctly and is 100% accurate because the results of the comparative evaluation results of manual analysis and the overall analysis of the DSS are appropriate.

Keywords: SMK, majors, SPK, criteria, WP

1. Introduction

Based on the Law of the Republic of Indonesia No. 6 of 2019 concerning Organizational Guidelines and Work Procedures for Primary and Secondary Education Units. Article 1 states that Vocational High School, hereinafter abbreviated as SMK, is a form of formal education unit that organizes vocational education at the secondary education level as a continuation of SMP, MTs, or other equivalent forms or a continuation of learning outcomes that are recognized as equal or equivalent. Middle school or MTs. Law of the Republic of Indonesia No. 34 of 2018 concerning National Standards for Vocational High School Education/Vocational Madrasah Aliyah. In article 2 paragraph 1 SNP SMK/MAK consists of (a) Graduate competency standards; (b) Content standards; (c) Standard learning process; (d) Educational standards; (e) Standards of educators and education personnel; (f) Standard of facilities and infrastructure; (g) Management standards; and (h) Standard operating costs. One of the determining factors for achieving graduate competence in the school environment is how the student system is and the interests and talents of students in the chosen major so that it has a positive impact on students. Learning activities in Vocational

High Schools are different from General High Schools. Learning activities are more focused on learning so that SMK graduates have special skills that can be relied on in the competitive world of work and the business world.

GKPS-3 Vocational High School is one of the private vocational schools located in Pematangsiantar City. SMK GKPS-3 has three competency skills, namely Accounting (AK), Office Administration (AP), and Software Engineering (RPL). One of the targets to be achieved by GKPS 3 Vocational School is to produce quality Human Resources and be able to compete in the world of work following the existing majors. In the process of selecting majors for prospective new students, they often experience obstacles, due to lack of understanding of the majors to be chosen, students cannot measure abilities and academic scores that do not meet the minimum requirements set by the school, become wrong majors, as a result in the learning process they are less interested. This will have an impact on school output, namely producing graduates or Human Resources who are not competent, qualified, and uncompetitive in the world of work and business. Based on this, it is very necessary to have an appropriate decision support system in helping the process of selecting majors for prospective new students.

A Decision Support System is a computer-based system that is intended to assist decision-making in utilizing certain data and models to solve various unstructured problems. Decision-making in the application of a decision support system for determining this major uses the Weighted Product method. A good and appropriate decision-making system will produce a system that can support the quality of the school in producing the best and competent students in their fields. Based on this, the researchers will conduct a study with the title "Decision Support System for Determining Majors at GKPS 3 Pematangsiantar Vocational High School by Using the Web-Based Weighted Product Method". The decision-making system that will be designed, it is expected to help prospective students in determining the selection of majors.

2. Method

Figure 1. Research Methodology

Problem Analysis is a stage where this research formulates the problem to be solved, according to the results of research conducted at SMK GKPS-3 Pematangsiantar still using a system error approach, so that in the process of determining majors, so that in the process of determining majors, prospective students must be selected based on the criteria that have been determined in determining the majors, then Data Collection uses several methods in making this system, including observation, interviews and literature study.

Furthermore, data analysis is a stage where this research collects the data needed to complete a study. In this study, the object to be taken is SMK GKPS 3 Pematangsiantar.

Then the WP Data Management System that is built will use the Weighted Product Method in the DSS for determining the Department. The Weight Product method is more efficient because the time required in the calculation is shorter. The weight for the benefit attribute functions as a positive power in the multiplication process, while the cost weight functions as negative power.
The weight fix for wj=1 is to use a formula.

$$W_j = \frac{w}{\sum w} \quad \ldots\ldots\ldots\ldots\ldots\ldots (1)$$

Formula to Determine Preference Value (Wj)
Information:
W : Preference Weight
Wj : Preference weight on index j
∑ W : Total weight
The variable W is a positive power for the profit attribute and negative for the cost attribute. The preference for the Si alternative is given as follows:

$$S_i = \prod_{j=1}^{n} X_{ij} wj \ldots\ldots\ldots\ldots\ldots (2)$$

Formula for Determining Preference Value (Si)
With i = 1, 2,…, m and j as attributes = 1, 2,…, n.
Information:
∏ : Product
Si : Score / value of each alternative
Xij : The i-th alternative value of the j . attribute
Wj : The weight of each attribute or criterion
n : Number of criteria
To find the best alternative, use the following equation:

$$V_i = \frac{\prod_{j=1}^{n} X_{ij} wj}{\prod_{j=1}^{n} (X_{j*}) wj} \quad simple \quad V_1 = \frac{S_1}{S_1 + S_2 + S_3} \quad \ldots\ldots (3)$$

Formula for Determining Preference Value (Vi)
Information:
V : Alternative preferences are analogous to vector V
X : Criteria value
W : Weight of criteria / sub-criteria
i : Alternative
j : Criteria
n : Number of criteria
* : The number of criteria that have been assessed on the vector S

3. Results and Discussion

3.1 Calculation of Weight Product (WP)

Based on the level of importance of each of the required criteria. The initial weight W for Accounting = (2, 4, 2, 2), for Office Administration = (2, 3, 2, 3) and for RPL = (1, 3, 4, 2) will be corrected so that the total weight ∑Wj = 1, where W is the weight of each criterion that the admin enters. The calculation of improvement of criteria by using equation i for Accounting majors:

$$W_1 = \frac{2}{2+4+2+2} = 0{,}2$$

$$W_2 = \frac{4}{2+4+2+2} = 0,4$$

$$W_3 = \frac{2}{2+4+2+2} = 0,2$$

$$W_4 = \frac{2}{2+4+2+2} = 0,2$$

The calculation of improvement criteria using equation i for the Office Administration department is as follows:

$$W_1 = \frac{2}{2+3+2+3} = 0,2$$

$$W_2 = \frac{3}{2+3+2+3} = 0,3$$

$$W_3 = \frac{2}{2+3+2+3} = 0,2$$

$$W_4 = \frac{3}{2+3+2+3} = 0,3$$

The calculation of improvement criteria using equation i for the Software Engineering department is as follows:

$$W_1 = \frac{1}{2+3+2+3} = 0,1$$

$$W_2 = \frac{3}{2+3+2+3} = 0,3$$

$$W_3 = \frac{4}{2+3+2+3} = 0,4$$

$$W_4 = \frac{2}{2+3+2+3} = 0,2$$

Furthermore, a sample of value data is given on all existing criteria. Of the many prospective students who have registered. So, taking 15 student data as an example for the application of the Weight Product (WP) method.

Table 1. Weight of Alternative Criteria

Alternative Student's name	Fans	Criteria			
		C1	C2	C3	C4
Debora Sinaga	Akuntansi	4	4	3	3
Evi T Harianja	Akuntansi	3	4	3	3
Rezakly Purba	Akuntansi	4	3	3	3
Tioman Manalu	Akuntansi	4	4	3	4
Enny Saragih	Akuntansi	4	4	3	3
Dea V Simanjuntak	RPL	4	4	4	4
Dicky Fernando	RPL	3	3	3	4
Eva S Nababan	RPL	4	4	3	4
Nicha E Sinaga	RPL	4	4	4	4
Nico W Saragih	RPL	3	3	3	4
Amigos Petron	AP	3	4	4	3
Ella Parangin-angin	AP	3	4	3	3
Fernanda Sianturi	AP	3	4	3	4

Alternative	Fans	Criteria			
Student's name		C1	C2	C3	C4
Ferlin Saragih	AP	4	4	3	5
Pardomuan Sirait	AP	4	4	3	4

Then look for the S value of each criterion from the alternative raised to the corrected weight according to the respective criteria, for the Accounting major.

$S_1=(4^{0,2})(4^{0,4})(3^{0,2})(3^{0,2})= 3,56520$
$S_2=(3^{0,2})(4^{0,4})(3^{0,2})(3^{0,2})= 3,56585$
$S_3=(4^{0,2})(3^{0,4})(3^{0,2})(3^{0,2})= 3,17768$
$S_4=(4^{0,2})(4^{0,4})(3^{0,2})(4^{0,2})= 3,77636$
$S_5=(4^{0,2})(4^{0,4})(3^{0,2})(3^{0,2})= 3,56520$
$S_6=(4^{0,2})(4^{0,4})(4^{0,2})(4^{0,2})= 4,00002$
$S_7=(3^{0,2})(3^{0,4})(3^{0,2})(4^{0,2})= 3,17768$
$S_8=(4^{0,2})(4^{0,4})(3^{0,2})(4^{0,2})= 3,77636$
$S_9=(4^{0,2})(4^{0,4})(4^{0,2})(4^{0,2})= 4,00002$
$S_{10}=(3^{0,2})(3^{0,4})(3^{0,2})(4^{0,2})= 3,17768$
$S_{11}=(3^{0,2})(4^{0,4})(4^{0,2})(3^{0,2})= 3,56520$
$S_{12}=(3^{0,2})(4^{0,4})(3^{0,2})(3^{0,2})= 3,36585$
$S_{13}=(3^{0,2})(4^{0,4})(3^{0,2})(4^{0,2})= 356520$
$S_{14}=(4^{0,2})(4^{0,4})(3^{0,2})(5^{0,2})= 3,94870$
$S_{15}=(4^{0,2})(4^{0,4})(3^{0,2})(4^{0,2})= 3,77636$

Then look for the S value of each criterion from the alternative to the rank with the corrected weight according to the respective criteria, for the Office Administration major.

$S_1=(4^{0,2})(4^{0,3})(3^{0,2})(3^{0,3})= 3,46411$
$S_2=(3^{0,2})(4^{0,3})(3^{0,2})(3^{0,3})= 3,27042$
$S_3=(4^{0,2})(3^{0,3})(3^{0,2})(3^{0,3})= 3,17767$
$S_4=(4^{0,2})(4^{0,3})(3^{0,2})(4^{0,3})= 3,77637$
$S_5=(4^{0,2})(4^{0,3})(3^{0,2})(3^{0,3})= 3,46412$
$S_6=(4^{0,2})(4^{0,3})(4^{0,2})(4^{0,3})= 4,00003$
$S_7=(3^{0,2})(3^{0,3})(3^{0,2})(4^{0,3})= 3,27042$
$S_8=(4^{0,2})(4^{0,3})(3^{0,2})(4^{0,3})= 3,77637$
$S_9=(4^{0,2})(4^{0,3})(4^{0,2})(4^{0,3})= 4,00003$
$S_{10}=(3^{0,2})(3^{0,3})(3^{0,2})(4^{0,3})= 3,27042$
$S_{11}=(3^{0,2})(4^{0,3})(4^{0,2})(3^{0,3})= 3,46411$
$S_{12}=(3^{0,2})(4^{0,3})(3^{0,2})(3^{0,3})= 3,27042$
$S_{13}=(3^{0,2})(4^{0,3})(3^{0,2})(4^{0,3})= 3,56522$
$S_{14}=(4^{0,2})(4^{0,3})(3^{0,2})(5^{0,3})= 4,03783$
$S_{15}=(4^{0,2})(4^{0,3})(3^{0,2})(4^{0,3})= 3,77636$

Then look for the S value of each criterion from the alternative to the power of the corrected weight according to the respective criteria, for the Department of Software Engineering.

$S_1=(4^{0,1})(4^{0,3})(3^{0,4})(3^{0,2})= 3,36589$
$S_2=(3^{0,1})(4^{0,3})(3^{0,4})(3^{0,2})= 3,27043$
$S_3=(4^{0,1})(3^{0,3})(3^{0,4})(3^{0,2})= 3,08767$
$S_4=(4^{0,1})(4^{0,3})(3^{0,4})(4^{0,2})= 3,56524$
$S_5=(4^{0,1})(4^{0,3})(3^{0,4})(3^{0,2})= 3,36589$
$S_6=(4^{0,1})(4^{0,3})(4^{0,4})(4^{0,2})= 4,00003$
$S_7=(3^{0,1})(3^{0,3})(3^{0,4})(4^{0,2})=3,17767$
$S_8=(4^{0,1})(4^{0,3})(3^{0,4})(4^{0,2})= 3,56524$
$S_9=(4^{0,1})(4^{0,3})(4^{0,4})(4^{0,2})= 4,00003$
$S_{10}=(3^{0,1})(3^{0,3})(3^{0,4})(4^{0,2})= 3,17767$
$S_{11}=(3^{0,1})(4^{0,3})(4^{0,4})(3^{0,2})= 3,66926$
$S_{12}=(3^{0,1})(4^{0,3})(3^{0,4})(3^{0,2})= 3,27043$
$S_{13}=(3^{0,1})(4^{0,3})(3^{0,4})(4^{0,2})= 3,46412$
$S_{14}=(4^{0,1})(4^{0,3})(3^{0,4})(5^{0,2})= 3,72795$
$S_{15}=(4^{0,1})(4^{0,3})(3^{0,4})(4^{0,2})= 3,56524$

Table 2. Value of Vector S

Alternative	Fans	Vector S . Value		
Student's name		Accounting	AP	RPL
Debora Sinaga	Akuntansi	3,56520	3,46411	3,36589
Evi T Harianja	Akuntansi	3,56585	3,27042	3,27043
Rezakly Purba	Akuntansi	3,17768	3,17767	3,08767
Tioman Manalu	Akuntansi	3,77636	3,77637	3,56524
Enny Saragih	Akuntansi	3,56520	3,46412	3,36589

Alternative / Student's name	Fans	Vector S . Value		
		Accounting	AP	RPL
Dea V Simanjuntak	RPL	4,00002	4,00003	4,00003
Dicky Fernando	RPL	3,17768	3,27042	3,17767
Eva S Nababan	RPL	3,77636	3,77637	3,56524
Nicha E Sinaga	RPL	4,00002	4,00003	4,00003
Nico W Saragih	RPL	3,17768	3,27042	3,17767
Amigos Petron	AP	3,56520	3,46411	3,66926
Ella Parangin-angin	AP	3,36585	3,27042	3,27043
Fernanda Sianturi	AP	356520	3,56522	3,46412
Ferlin Saragih	AP	3,94870	4,03783	3,72795
Pardomuan Sirait	AP	3,77636	3,77636	3,56524

The following is a description of Vector V for each alternative in the Accounting major.

$$V_1 = \frac{3,56520}{3,56520+3,56585+3,17768+3,77636+3,56520+4,0002+3,17768+3,77636+4,0002+3,17768+3,56520+3,36585+3,56520+3,94870+3,77636}$$

$$=\frac{3,56520}{53,80336} = 0,06626$$

And so on until the value of V to 15.

The following is a description of Vector V for each alternative in the Office Administration major.

$$V_1 = \frac{3,46411}{3,46411+3,27042+3,17767+3,77637+3,46412+4,0002+3,27042+3,56520+3,77367+4,0003+3,27042+3,46411+3,27042+3,56522+4,03783+3,77636}$$

$$=\frac{3,46411}{53,5839} = 0,06465$$

And so on until the value of V to 15.

The following is a description of Vector V for each alternative in the Software Engineering (RPL) major.

$$V_1 = \frac{3,36589}{3,36589+3,27043+3,08767+3,56524+3,36589+4,0003+3,17767+3,56524+4,0003+3,17767+3,66926+3,27043+3,46412+3,72795+3,56524}$$

$$=\frac{3,36589}{52,27266} = 0,06439$$

And so on until the value of V to 15.

Table 3. Value of Vector V

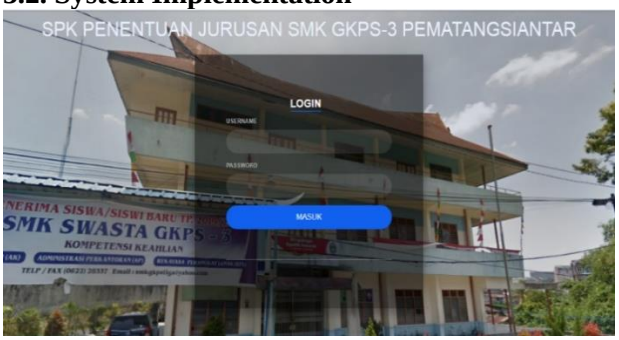
Alternative / Student's name	Fans	Vector V . Value		
		Accounting	AP	RPL
Debora Sinaga	Akuntansi	0,06626	0,06465	0,06439
Evi T Harianja	Akuntansi	0,06256	0,06103	0,06256
Rezakly Purba	Akuntansi	0,05906	0,05930	0,05907
Tioman Manalu	Akuntansi	0,07019	0,07048	0,06820

Alternative Student's name	Fans	Vector V . Value		
		Accounting	AP	RPL
Enny Saragih	Akuntansi	0,06626	0,06465	0,06439
Dea V Simanjuntak	RPL	0,07435	0,07465	0,07652
Dicky Fernando	RPL	0,05906	0,06103	0,06079
Eva S Nababan	RPL	0,07019	0,07048	0,06820
Nicha E Sinaga	RPL	0,07435	0,07465	0,07652
Nico W Saragih	RPL	0,05906	0,06103	0,06079
Amigos Petron	AP	0,06626	0,06465	0,07019
Ella Parangin-angin	AP	0,06256	0,06103	0,06256
Fernanda Sianturi	AP	0,06626	0,06654	0,06627
Ferlin Saragih	AP	0,07339	0,07536	0,07132
Pardomuan Sirait	AP	0,07019	0,07048	0,06820

Based on the results of the calculation of V obtained, the recommendation of majors for prospective students is obtained. The following is a table of recommendations for determining majors.

Alternative Student's name	Fans	Vector V . Value			Recommendation
		Accounting	AP	RPL	Major
Debora Sinaga	Akuntansi	0,06626	0,06465	0,06439	Akuntansi
Evi T Harianja	Akuntansi	0,06256	0,06103	0,06256	Akuntansi, RPL
Rezakly Purba	Akuntansi	0,05906	0,05930	0,05907	AP
Tioman Manalu	Akuntansi	0,07019	0,07048	0,06820	AP
Enny Saragih	Akuntansi	0,06626	0,06465	0,06439	Akuntansi
Dea Simanjuntak	RPL	0,07435	0,07465	0,07652	RPL
Dicky Fernando	RPL	0,05906	0,06103	0,06079	AP
Eva S Nababan	RPL	0,07019	0,07048	0,06820	AP
Nicha E Sinaga	RPL	0,07435	0,07465	0,07652	RPL
Nico W Saragih	RPL	0,05906	0,06103	0,06079	AP
Amigos Petron	AP	0,06626	0,06465	0,07019	RPL
Ella Paranginan	AP	0,06256	0,06103	0,06256	Akuntansi,RPL
Fernanda Sianturi	AP	0,06626	0,06654	0,06627	AP
Ferlin Saragih	AP	0,07339	0,07536	0,07132	AP
Pardomuan Sirait	AP	0,07019	0,07048	0,06820	AP

3.2. System Implementation



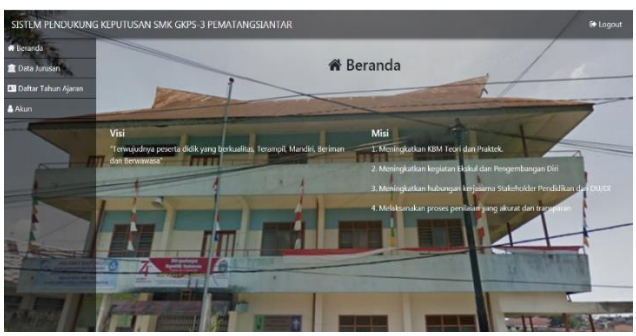
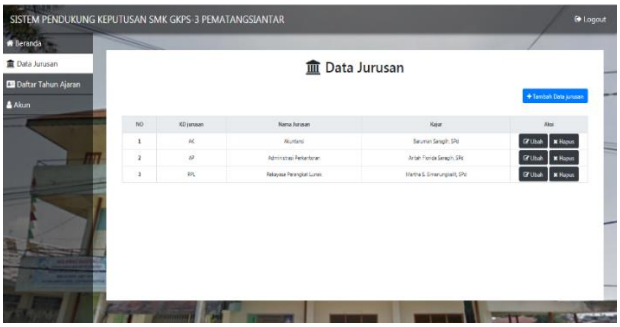


Figure 2 display is the login view.

Figure 3 is the main page that displays menus that can be accessed by the admin.



Picture 4 is the display of the school year page, where the admin can add, delete or change the data for the school year.

Figure 5 is a Criteria assessment display, when the Principal (principal) selects the calculation menu, the criteria assessment page will appear for each department and the weight of each criterion..

Figure 6 is the criteria weight normalization page.

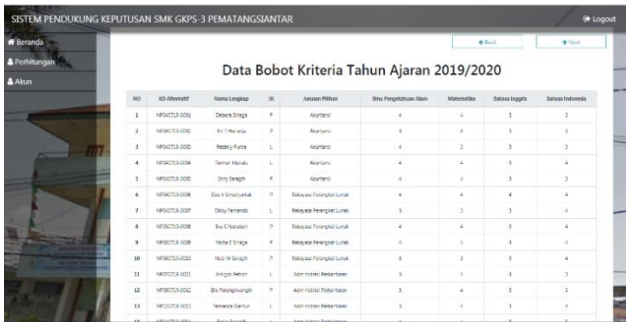


Figure 7 Criteria normalization page view

Figure 8 is a page of the calculation results of Vector S.

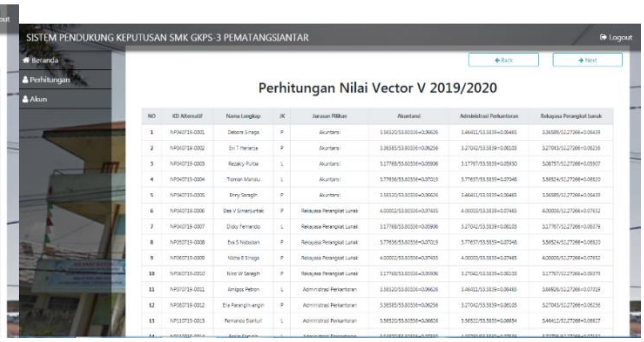
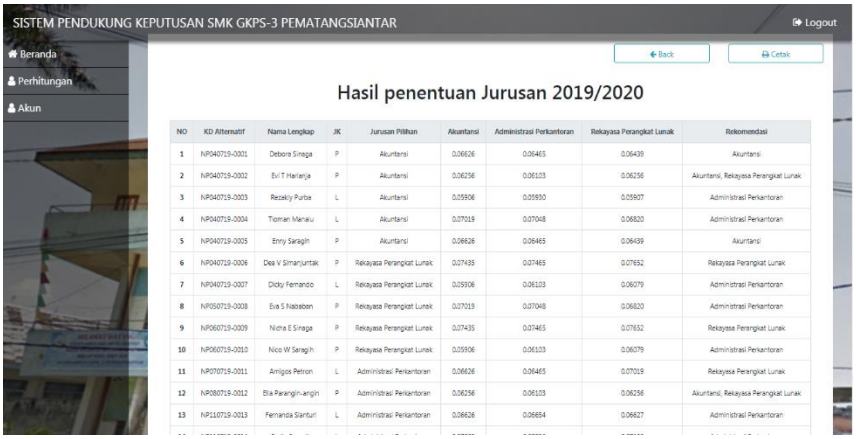


Figure 9 is the result page for the vector V generated from the vector S value in each alternative divided by the total number of available alternative values.



NO	KD Alternatif	Nama Lengkap	JK	Jurusan Pilihan	Akuntansi	Administrasi Perkantoran	Rekayasa Perangkat Lunak	Rekomendasi
1	NP040719-0001	Debora Sinaga	P	Akuntansi	0.06626	0.06465	0.06439	Akuntansi
2	NP040719-0002	Evi T Harianja	P	Akuntansi	0.06256	0.06103	0.06256	Akuntansi, Rekayasa Perangkat Lunak
3	NP040719-0003	Rezeky Purba	L	Akuntansi	0.05906	0.05930	0.05807	Administrasi Perkantoran
4	NP040719-0004	Tioman Manalu	L	Akuntansi	0.07019	0.07048	0.06820	Administrasi Perkantoran
5	NP040719-0005	Enny Saragih	P	Akuntansi	0.06626	0.06465	0.06439	Akuntansi
6	NP040719-0006	Dea V Simanjuntak	P	Rekayasa Perangkat Lunak	0.07435	0.07465	0.07652	Rekayasa Perangkat Lunak
7	NP040719-0007	Dicky Fernando	L	Rekayasa Perangkat Lunak	0.05906	0.06103	0.06079	Administrasi Perkantoran
8	NP050719-0008	Eva S Naibaboo	P	Rekayasa Perangkat Lunak	0.07019	0.07048	0.06820	Administrasi Perkantoran
9	NP060719-0009	Nicha E Sinaga	P	Rekayasa Perangkat Lunak	0.07435	0.07465	0.07652	Rekayasa Perangkat Lunak
10	NP060719-0010	Nico W Saragih	P	Rekayasa Perangkat Lunak	0.05906	0.06103	0.06079	Administrasi Perkantoran
11	NP070719-0011	Amigos Petron	L	Administrasi Perkantoran	0.06626	0.06465	0.07019	Rekayasa Perangkat Lunak
12	NP080719-0012	Bia Parangin-angin	P	Administrasi Perkantoran	0.06256	0.06103	0.06256	Akuntansi, Rekayasa Perangkat Lunak
13	NP110719-0013	Fernanda Sianturi	L	Administrasi Perkantoran	0.06626	0.06654	0.06627	Administrasi Perkantoran

Figure 10 is the final result or recommendation for the selection of majors that have been calculated using the Weight Product SPK method.

4. Conclusions

a. The decision support system that is applied using the Weight Product method can make it easier to determine majors at SMK GKPS-3
b. The results of manual calculations compared with the output of the Decision Support System has the same results. This shows that the Decision Support System that is designed can process the selection of new student admissions well.
c. The designed SPK operates properly and correctly and is 100% accurate because the evaluation results of the comparison of the results of manual analysis and overall DSS analysis are appropriate.
d. This system is only a tool for decision-makers, the final decision remains in the hands of the decision-maker.

Reference

[1] Abdul dan Hendra, Analisa Dan Perancangan Sistem Pendukung Keputusan Pemilihan Pasangan Hidup Menurut Budaya Karo DenganMenggunakan Metode Analitycal Hierarchy Process (AHP), Jurnal Ilmu Komputer dan Informatika, Vol.2, No.1, 2018.
[2] Achmad, dkk, Sistem Pendukung Keputusan Perekrutan Operator Mesin Computer Numerical Dengan Metode Weight Product, Jurnal Algoritma Logika dan Komputerisasi Vol.1, No.1, 2018.
[3] Agus dan Yulia, 2015, Pemanfaatan Sistem Informasi Perpustakaan Digital Berbasis Website Untuk Para Penulis, IJSE – Indonesian Journal on Software Engineering, Vol.1, No.1, 2015.
[4] Astria dkk, Sistem Informasi Perpustakaan Online Berbasis Web, E-journal Teknik Elektro dan Komputer, Vol.5, No.2, 2016.
[5] Beni, dkk, Penerapan Metode Electre Sebagai Sistem Pendukung Keputusan Dalan Penerimaan Beasiswa, 14/3, Buletin Utama Teknik, Vol.14, No.3, 2019.
[6] Eniyanti Sri, Perancangan Sistem Pendukung Keputusan untuk Penerimaan Beasiswa dengan SAW (Simple Additive ing), Jurnal Teknologi Informasi DINAMIK, Vol.16, No.2, 2011.
[7] Faizal dan Putri, Sistem Informasi Pengolahan Data Pegawai Berbasis Web (Study Kasus: PT Perkebunan Nusantara), Jurnal Teknologi Informasi dan Komunikasi, 2017.

[8] Mara dan Qadhli, Sistem Informasi Penjadwalan Dokter Berbasis Web Dengan Menggunkan Framework Codeigniter (Study Kasus: Rumah Sakit Yukum Medical Center), Jurnal TEKNOINFO, Vol.11, No.2, 2017.
[9] Perwira Yuda, Penentuan Peringkat Pelaggan Terbaik Dengan Metode Weight Product (Study Kasus: PT. Asia Raya Foundry), Jurnal Mantik Penusa, 2019.
[10] Prisa dkk, Analisis Perbandingan Metode SAW dan WP Pada Sistem Pendukung Keputusan Pemilihan Wedding Organizer di Surabaya, Teknika : Engineering and Sains Journal, Vol.3, No.1, 2019.
[11] Sasiska, Sistem Pendukung Keputusan Pemilihan Sepeda Motor Berbasis Web Dengan Metode Weight Product, Skripsi, Teknik Informatika, STMIK Budidarma Medan, 2016
[12] Seundri, Implementasi Diagram UML (Unifeid Modelling Language) Pada Perencanaan Sistem Informasi Remunerasi Dosen Dengan DataBase Oracle (Study Kasus: UIN Sumatra Utara), ALGORITMA: Jurnal Ilmu Komputer dan Informatika, Vol.3, No.1, 2018.
[13] Susliansyah dkk, Pemilihan Laptop Terbaik Menggunakan Metode Weighted Product, Jurnal TECHNO Nusa Mandiri, Vol.16, No.1, 2019.
[14] Wahyu dan Ely, Sistem Pendukung Keputusan Pemilihan Juusan Pada Sekolah Menengah Kejuruan Dengan Metode Simple Additive Weithting, Prosiding Seminar Informatika Aplikatif Polinema, 2015.